

Wade Roberts

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Research interests

Ecological and evolutionary genomics of species diversity; genetics of flower development; evolutionary-developmental biology; phylogenetics and comparative biology; species boundaries and hybridization; biogeography and conservation

Education

Washington State University, Pullman, WA | Aug 2012 – May 2018

Ph.D., Molecular Plant Sciences

Dissertation title: "Evolutionary genomics of flower diversification in the magic flowers (*Achimenes*, Gesneriaceae)"

Major supervisor: Dr. Eric H. Roalson

Committee: Drs. Amit Dhingra, Joanna L. Kelley, and Andrew McCubbin

Whitworth University, Spokane, WA | Sep 2007 – May 2012

B.S., Biology

B.A., Art

Advisors: Dr. Lee Anne Chaney and Ms. Katie Creyts

Skills + expertise

Research – comparative genomics and transcriptomics, phylogenetic inference, biological network analysis

Computational – R/Python/Perl/Git, genomic data processing, data visualization, parallel computing, multivariate statistics, Bayesian statistics

Management – experimental design, grant application preparation, interdisciplinary collaboration

Laboratory – molecular biology, RNA-seq and DNA-seq library preparation, qPCR, micropropagation and tissue culture, genetic transformation, microscopy, biochemistry

Field – plant identification (Pacific Northwest and Palouse region), fieldwork in floristics, herbarium processing and databasing, greenhouse plant growth and maintenance

Other – K-12 STEM outreach, student education and mentoring, public speaking, scientific writing

Publications

3. **Roberts, W.R.**, and E.H. Roalson. 2018. Phylogenomic analyses reveal extensive gene flow within the magic flowers (*Achimenes*). *American Journal of Botany* 105(4): 1-15.
DOI: 10.1002/ajb2.1058

2. **Roberts, W.R.**, and E.H. Roalson. 2017. Comparative transcriptome analyses of flower development in four species of *Achimenes* (Gesneriaceae). *BMC Genomics* 18(1): 240.
DOI: 10.1186/s12864-017-3623-8

1. Roalson, E.H., and **W.R. Roberts**. 2016. Distinct processes drive diversification in different clades of Gesneriaceae. *Systematic Biology* 65(4): 662-684. *Cover Image*
DOI: 10.1093/sysbio/syw012

Manuscripts in prep

Roberts, W.R., N. Zhang, and E.H. Roalson. Molecular evolution of anthocyanin and carotenoid pigmentation genes during transitions in floral pollination syndromes. (In prep)

Roberts, W.R., and E.H. Roalson. Co-expression network connectivity is an important determinant of selective constraint during flower diversification in *Achimenes* (Gesneriaceae). (In prep)

Roberts W.R., J.L Crabb, A. Dhingra, and E.H. Roalson. Micropropagation and *Agrobacterium*-mediated genetic transformation of *Achimenes erecta* (Gesneriaceae). (In prep)

Oral presentations

Gene co-expression network connectivity is an important determinant of selective constraint during flower diversification in the magic flowers (*Achimenes*, Gesneriaceae)

Roberts, W.R., and E.H. Roalson

Botany, Rochester, MN | Jul 2018 (contributed)

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Oral cont'd

Genomic evidence for gene flow between species of magic flowers (*Achimenes*, Gesneriaceae)
Roberts, W.R., and E.H. Roalson
Evolution, Portland, OR | Jun 2017 (contributed)

Evolutionary genomics in the magic flowers (*Achimenes*, Gesneriaceae)
Roberts, W.R.
Molecular Plant Sciences Seminar, Pullman, WA | Apr 2017 (departmental seminar)

Dissecting floral diversification in the magic flowers (*Achimenes*, Gesneriaceae)
Roberts, W.R., and E.H. Roalson
SBS Graduate Student Symposium, Pullman, WA | Mar 2017 (invited)

Floral diversification in Gesneriaceae: macroevolutionary and genomics approaches
Roberts, W.R.
Molecular Plant Sciences Seminar, Pullman, WA | Oct 2016 (departmental seminar)

Understanding flower diversification in *Achimenes* (Gesneriaceae) using a comparative transcriptomics approach
Roberts, W.R., and E.H. Roalson
Botany, Edmonton, AB | Jul 2015 (contributed)

Poster presentations

Phylogenomic analyses reveal extensive gene flow within the magic flowers (*Achimenes*, Gesneriaceae)
Botany, Rochester, MN | Jul 2018
SBS Graduate Student Symposium, Pullman, WA | Mar 2018
WSU Academic Showcase, Pullman, WA | Mar 2018
WSU Plant Sciences Retreat, Pullman, WA | Mar 2018

Exploring phylogenetic relationships in *Achimenes* (Gesneriaceae) using transcriptome sequencing
SBS Graduate Student Symposium, Pullman, WA | Mar 2017
WSU Plant Sciences Retreat, Pullman, WA | Mar 2017

Using comparative transcriptomics to understand flower diversification: an example from *Achimenes* (Gesneriaceae)
Inland Northwest Genomics Research Symposium, Moscow, ID | May 2016 *Poster award*
WSU Academic Showcase, Pullman, WA | Mar 2016
WSU Plant Sciences Retreat, Pullman, WA | Mar 2016

Understanding flower diversification in *Achimenes* (Gesneriaceae) using a comparative transcriptomics approach
Pan-Am Evo Devo inaugural meeting, Berkeley, CA | Aug 2015

Geographic processes drive diversification in different clades of Gesneriaceae
SBS Graduate Student Symposium, Pullman, WA | Feb 2015
WSU Plant Sciences Retreat, Pullman, WA | Mar 2015

Cloning and evolutionary analyses of *SEPALLATA3* genes from dogwoods – deciphering the genetic links to bract petaloidy
NCSU Undergraduate Summer Research Symposium, Raleigh, NC | July 2011

Grants + awards

Doctoral Dissertation Improvement Grant, National Science Foundation
"Evolution of gene expression in floral diversification of Neotropical Gesneriaceae",
PI: Eric H. Roalson, Co-PI: Wade R. Roberts (\$19,323) | 2016-2017
Elvin McDonald Research Endowment Fund, The Gesneriad Society,
"Characterizing a red-to-blue flower color transition in *Achimenes* (Gesneriaceae)"
PI: Wade R. Roberts (\$1,750) | 2016
Best Poster Presentation, Inland Northwest Genomics Symposium | 2016
Travel Award, American Society of Plant Taxonomists (\$300) | 2015
Global Plant Sciences Initiative Fellowship, Washington State University (\$10,000) | 2012
Trustee Scholarship, Whitworth University (\$18,000 x4 years) | 2007-2012
NSF REU Fellow in Synthetic Biology, North Carolina State University (\$5,500) | 2011

Teaching

Graduate Teaching Assistant, Washington State University | Aug 2013 – May 2018
Biol 332 Systematic Botany (3 semesters)
Biol 120 Introductory Botany (3 semesters)
Biol 106 Introductory Biology: Organismal Biology (5 semesters)

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- Teaching cont'd** **Guest Lecturer**, Washington State University
Biol 332 Systematic Botany, "Berberidaceae, Papaveraceae, Saxifragaceae" | Mar 2018
- Teaching Assistant / Supplemental Instructor**, Whitworth University | Feb 2010 – May 2012
Bio 363 Genetics (1 semester)
Bio 153 Plant Biology (2 semesters)
Bio 141 General Biology I: Organismal Biology (1 semester)
- Experience** **Teaching Assistant**, School of Biological Sciences, Washington State University | 2013 – 2018
Instructors: Drs. Lisa Carloye, Asaph Cousins, Hanjo Hellman, Ray Lee, Andrew McCubbin, and Sian Ritchie, Eric Roalson, School of Biological Sciences
- Research Assistant**, Roalson Lab, Washington State University | Aug 2012 – May 2018
PI: Dr. Eric Roalson, School of Biological Sciences
- Fieldwork + Floristics**, Hudson Biological Reserve, Washington State University | 2016, 2017
Supervisor: Dr. Eric Roalson, School of Biological Sciences
- Greenhouse worker**, Biology Department, Whitworth University | Sep 2010 – May 2012
Supervisor: Dr. Lee Anne Chaney, Biology Department
- Undergraduate Research Assistant**, Whitworth University | Sep – Dec 2011
PI: Dr. Finn Pond, Biology Department
- NSF Research Experience for Undergraduates**, North Carolina State University | May – Aug 2011
PI: Dr. Jenny Xiang, Department of Plant and Microbial Biology
- Service + outreach** **Volunteer Botanist**, Steptoe Butte Botany Blitz, Palouse Conservation District | May 2018
Faculty Representative, MPS Graduate Student Organization | April 2016 – May 2018
Co-Lead Organizer, Plant Science Day | Apr 2017
Co-Lead, Palouse Discovery Science Center Committee | Nov 2014 – 2016
Exhibit Leader, Plant Science Day | Apr 2016
Native Plant Guide, Palouse Outdoor Science Day | Apr 2015
Greenhouse Tour Guide, Biology Open House | Oct 2015, Oct 2014
- Scientific Peer Review** *PhytoKeys*, *Plant Growth Regulation*
- Training** **Software Carpentry Workshop**, Center for Environmental Research, Education, and Outreach
Washington State University | Aug 2017
Parallel Computing Workshop, Center for Institutional Research Computing
Washington State University | Jun 2017
Grant Writing Workshop, Graduate School
Washington State University | Apr 2013
- Honorific names** 'Wade Riley', M. Roberts, Tall Bearded Iris, The American Iris Society | 2007
- Student mentoring** **Graduates**
Joseph Kleinkopf (Master's student; Fall 2016 – May 2018)
Nan Zhang (Sep 2017 – May 2018)
Raimundo Luciano Soares Neto (visiting Ph.D.; Jul 2017 – Oct 2017)
- Phoenix Conservancy**
Mara Huang (fieldwork; May 2017 – Aug 2017)
Connor McLeod (fieldwork; May 2017 – Aug 2017)
Tia Prudholm (fieldwork; May 2017 – Aug 2017)
Bethany Tegt (fieldwork; May 2017 – Aug 2017)
- Undergraduates**
Julian Bennett-Ponsford (Fall 2015 – Spring 2016)
Becca Saunders (Spring 2016)
- Society membership** American Society of Plant Taxonomists (2014 – current)
Botanical Society of America (2012 – current)
The Gesneriad Society (2012 – current)
Society for the Study of Evolution (2014 – current)

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References

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Dr. Andrew McCubbin
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Dr. Joanna L. Kelley
Assistant Professor, School of Biological Sciences
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